

3 Sep 2014

Mr Stuart Peevor
Manager, Pricing and Access
Essential Services Commission of SA
Adelaide

Dear Stuart,

The following notes provide context to our discussion at Tintinara last week regarding the undesirable environmental impacts of graziers changing their major enterprise away from beef cattle into sheep or cropping on fragile sandy soils.

The notes are based on my best memory as I no longer have access to my former files and reports.

Prior to 1977

The predominant pastures of the upper south east consisted of Hunter River lucerne. This pasture base for the region had been developed over the previous two or more decades and was made possible by the discovery of the role of particular macro and trace elements necessary for the productive growth of introduced legumes. (Phosphorus, sulphur, potassium, copper, cobalt, zinc and molybdenum).

Late 1977, 1978, 1979, 1980

In late 1977 the first reports of Spotted Alfalfa Aphid were made. This pasture pest went on to decimate many tens of thousands of hectares of the Hunter River lucerne to the point that it was all but totally destroyed. On such a large scale insecticide sprays were uneconomic and of only short term benefit.

Two other pasture aphids soon followed – the Blue Green Aphid and the Pea Aphid adding to the existing problem.

Later analysis of stock numbers in Counties Cardwell and Buckingham (most of the upper south east) from Australian Bureau of Statistics data showed that graziers did not immediately reduce their livestock numbers in face of this severe feed reduction. In terms of dry sheep equivalents the proportion of sheep was much higher than beef cattle at the time. Wool production had been more profitable than beef over the previous years.

Two main combat programs were implemented. Initially aphid resistant lucerne cultivars were imported from the USA but time was needed to increase seed supplies. This genetic material was also incorporated into the South Australian lucerne breeding program but it took several years before well adapted new cultivars were available to graziers. The second approach was biological control with predator insects. This showed some success but on the large scale of damage many lucerne pasture paddocks were effectively dead and beyond salvage.

The overall net effect was that huge areas of the upper south east light sandy soils were left bare and exposed and stocking rates had not been adequately reduced to compensate.

Some switch to cropping was attempted with mixed results. Graziers generally did not have satisfactory cultivation and seeding machinery. Lucerne pastures are a precursor to the development of non-wetting sands and this made cropping on these soils particularly difficult and risky.

1981

This year had an extremely wet winter – spring period with extensive flooding in the eastern part of the upper south east (Tatiara – Bordertown districts). The effect on the bared out light soils was a significant lift in groundwater levels via accelerated recharge. The high rainfall gave some respite to graziers affected by the aphid crisis as other annual pasture species, mainly native grasses, benefited from an extended growing season.

1982, 1983

Immediately following the wet year of 1981 came an 18 month drought period and this really piled on detrimental environmental pressures to the light sandy landscape.

Lucerne had been lost, critically on the sandy rises. At the beginning of the drought livestock numbers were still too high because to some extent graziers had a bit of false hope following the high rainfall of the year before.

The outcome was massive wind erosion, the scars of which can still be seen in a few isolated pockets today.

In extreme instances fence lines were buried, roads were made impassable with windblown sand and livestock watering points were destroyed.

1984

By now aphid resistant lucerne cultivars were becoming commercially available and graziers were beginning to sow back their pastures. Now come the next environmental impact – dryland salinity.

It soon became apparent that the area had faced a perfect storm leading to this latest development.

- a. The loss of lucerne as a deep rooted perennial and its role in controlling groundwater tables.
- b. The huge recharge event across the area in 1981.
- c. The high evapotranspiration effect of the drought associated with an already largely bare soil surface.

On lower lying areas and on the lower slopes of the sandy rises new lucerne plantings were failing due to salt that had built up in the root zone.

1985 to 2014

Over the past 30 years many farm practices have changed for the better to produce the generally stable and sustainable systems in place throughout the upper south east today.

Eg

- Successful adaption of aphid resistant lucerne cultivars and a longer term rebalancing of the insect population between 'harmfuls' and 'beneficials'.
- Improvements in cropping technologies (nil-till, min-till) for lighter soils and new machinery designs.
- The Upper South East Dryland Salinity and Drainage scheme in the southern area of the region.
- Large areas of revegetation and rehabilitation of native bushland.
- The development of saltland agronomy methods and alternative pasture species.

- A distinct move to more beef cattle (partly driven by the collapse in wool prices in 1990). This may have been an unplanned benefit. But with cattle having larger feet than sheep for a given stocking rate the effect is that they are 'softer' on the soil. Also sheep have a different dental structure than cattle and graze closer to the ground, thus damaging the crowns of lucerne plants if allowed to remain in a paddock too long.
- A better understanding of fertiliser requirements and the range of fertiliser products available.
- The introduction of soil amelioration techniques such as clay spreading and delving.
- Within the sheep numbers wool sheep have declined and meat breeds for prime lamb production have increased.

In relation to water supply and pricing

Without repeating much of what was conveyed to the EM Commission staff at the Tintinara meeting it is worth noting the environmental concerns that arise from high water pricing acting as a driver for enterprise change.

- *Any move away from beef cattle to sheep will put greater pressure on pastures due to the closer grazing habit of sheep and a higher risk of bare soils and wind erosion potential.*
- *The undesirability of cropping the sandy rise country due to non-wetting sand effects, increased rainfall recharge, generally poor yields (profitability), high capital investment in machinery and significant wind erosion risks.*

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